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Australian Council *for* Educational Research

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Professor Geoff Masters
Chief Executive Officer

School improvement in the digital age

School improvement is a key objective of all education systems and school leaders who share a common drive to deliver improved outcomes for students. It is necessary because the methods of the past are not sufficient for educating the children of today and the future, in order that they can flourish in the digital age.

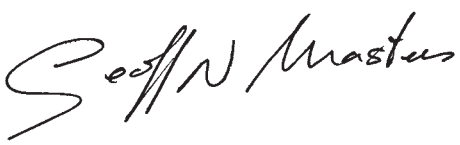
In this edition of *Research Developments*, Julian Fraillon reports on the results of the National Assessment Program – Information and Communications Technologies. He describes Australian students' proficiency in information and communication technology (ICT) and their use of ICT at school and at home, and how it has changed over time.

Juliette Mendelovits then reports on the findings of an international assessment of 15-year-old students' ability to read digital texts. Analysis of the digital reading component of the OECD Programme for International Student Assessment enables international comparison of Australian students' ability to read, understand and interact with digital texts, and comparison of digital and print reading ability.

Danielle Anzai reports on the development of a computer-based early-years literacy and numeracy assessment that will be used to assess Year 1 students' literacy and numeracy skills in the Northern Territory from 2013. The assessment pioneers an approach where early years students independently interact with the program, rather than requiring one-to-one administration by a teacher.

Also in this edition, I report on the considerations necessary in developing a framework to measure and reward school improvement. This article draws on my keynote presentation to the 17th annual ACER Research Conference, held in Sydney in August 2012, to emphasise that the focus of school improvement must be on improvements in the day-to-day work over which schools have direct control.

It is fitting that the majority of the articles in this issue are focused on digital technologies, as this will be the final print edition of *Research Developments* before it returns in a new online format in 2013. I encourage you to subscribe to the new publication by registering your email address at <www.acer.edu.au/rd>.



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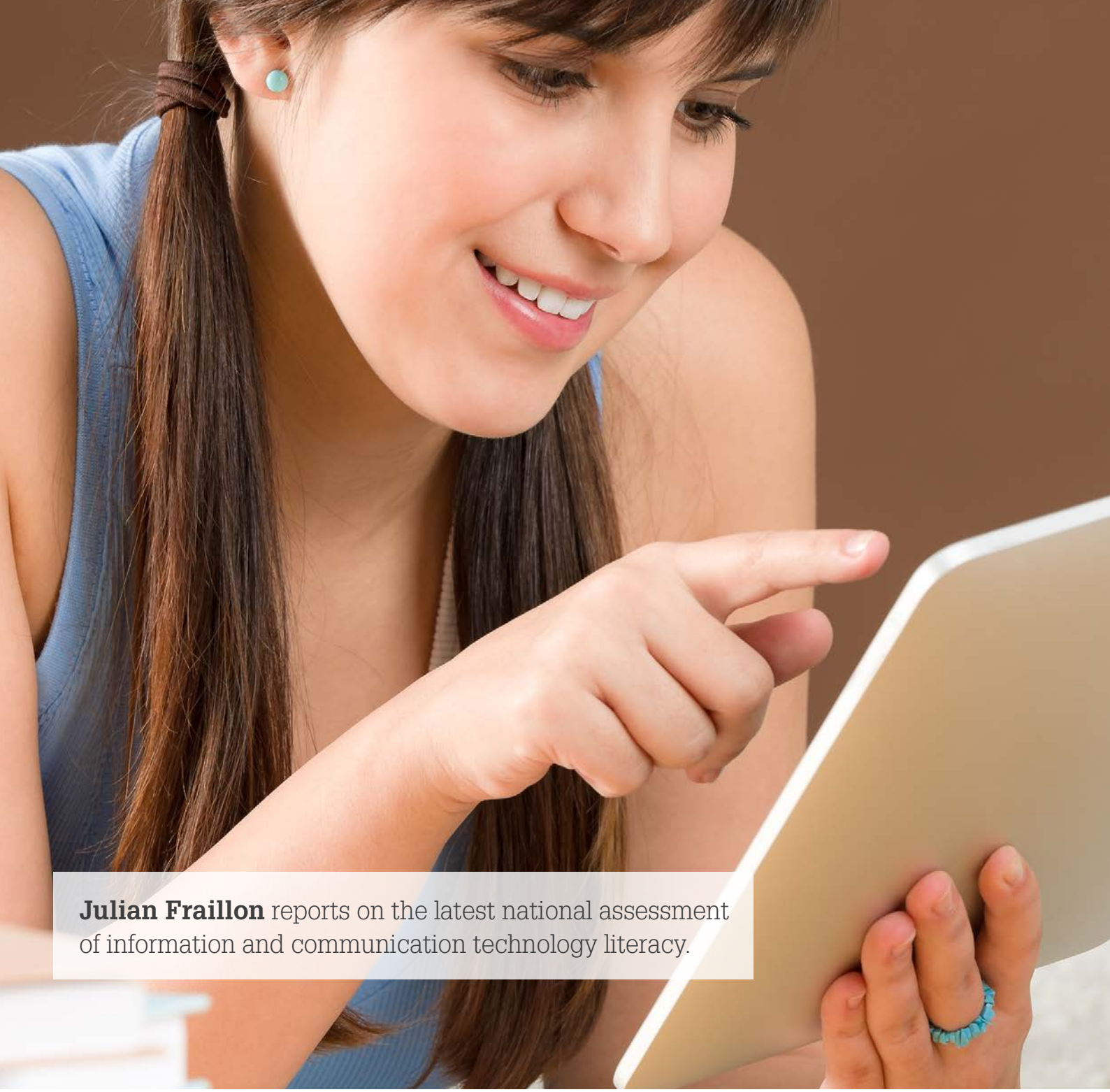


Julian Fraillon reports on the latest national assessment of information and communication technology literacy.

The ‘digital natives’ and ICT literacy

Julian Fraillon is the Research Director of ACER's Assessment and Reporting: Mathematics and Science research program.

The third cycle of the National Assessment Program – Information and Communications Technologies (NAP – ICT) Literacy was conducted by ACER for the Australian Curriculum, Assessment and Reporting Authority in October 2011. It reveals the level of ICT literacy among Australian school students in 2011 and reports changes in ICT literacy since the first cycle of NAP – ICT in 2005 and the second in 2008.

The assessment was conducted using a computer-based performance assessment tool that was developed for the 2005 survey and subsequently extended to embrace new developments in ICT contexts, assessment and delivery methods. A nationally representative sample of approximately 5700 students from Year 6 and 5300 students from Year 10 sampled randomly from 649 schools completed the assessment.

Proficiency in ICT literacy

The 2011 assessment measured literacy against Proficient Standards established in 2005 for Year 6 and Year 10. The Proficient Standards represent 'challenging but reasonable' expectations for typical Year 6 and 10 students to have reached.

A Year 6 student at Proficient Standard can:

- generate simple general search questions and select the best information source to meet a specific purpose;
- retrieve information from given electronic sources to answer specific, concrete questions;
- assemble information in a provided simple linear order to create information products; and
- use conventionally recognised software commands to edit and reformat information products.

A Year 10 student at Proficient Standard can:

- generate well targeted searches for electronic information sources and select relevant information from within sources to meet a specific purpose;
- create information products with simple linear structures and use software commands to edit and reformat information products in ways that demonstrate some consideration of audience and communicative purpose; and
- recognise situations in which ICT misuse may occur and explain how specific protocols can prevent this.

In 2011, 62 per cent of Year 6 students and 65 per cent of Year 10 students reached or exceeded the relevant Proficient Standard.

Changes in ICT literacy from 2005 to 2011

In 2011 the average score for Year 6 students was 435 scale points. This represents a steady increase on the national average scores of 419 in 2008 and 400 for the first NAP-ICT Literacy in 2005. The average score for Year 10 students remained stable over the six years from 2005 to 2011.

Change in students' ICT literacy from 2005 to 2011 can also be seen in the percentage of students who attained the Proficient Standard. In 2011, 62 per cent of Year 6 students reached or exceeded the Year 6 Proficient Standard compared to 49 per cent in 2005, and 57 per cent in 2008. For Year 10 students, 65 per cent reached or exceeded the Year 10 Proficient Standard in 2011, up slightly on 61 per cent in 2005.

Differences associated with student characteristics

Students' ICT literacy achievement is generally related to their background characteristics, particularly in terms of parental occupation and education. In Year 6, 50 per cent of students with parents in 'unskilled manual, office and sales' occupational groups attained the Proficient Standard compared to 79 per cent of students with parents from the 'senior managers and professionals' occupational groups. In Year 10 the corresponding figures were 57 per cent and 78 per cent.

Among Year 6 students, 44 per cent of students whose parents had completed Year 10 reached or exceeded the Proficient Standard compared to 79 per cent among those who had at least one parent with a university degree. For Year 10 students the corresponding percentages were 54 per cent and 78 per cent.

There is also a substantial gap in ICT literacy between Indigenous and non-Indigenous students. In Year 6, 31 per cent of Indigenous students attained

Australian teenagers continue to have access to, and use, ICT to a greater extent than their peers in many other countries and are among the highest users of ICT in the Organisation for Economic Cooperation and Development

the Proficient Standard compared to 64 per cent of non-Indigenous students. At Year 10, the corresponding percentages were 36 per cent and 66 per cent.

There is also evidence of differences in ICT literacy according to geographic location. Metropolitan students in Year 6 and Year 10 on average obtain a higher average ICT literacy score than students in provincial areas who, in turn obtain a higher average score than those in remote areas. The percentages of Year 6 students attaining the Proficient Standard were 66, 51 and 45 per cent for metropolitan, provincial and remote respectively. The percentages of Year 10 students attaining the Proficient Standard were 67, 58 and 47 per cent for metropolitan, provincial and remote respectively.

Consistent with the pattern observed in 2008, girls on average obtain higher levels of ICT literacy than boys. Even though girls express lower levels of interest and enjoyment than boys in computing, they express similar levels of confidence in their ability to carry out ICT-based tasks without assistance. There were no differences between students speaking a language other than English at home and those with an English-speaking background.

ICT use at home and school

Students use computers more frequently at home than at school. Sixty per cent of Year 6 students use computers at home almost every day or more frequently, compared with 27 per cent at school. The corresponding figures for Year 10 students were 82 per cent and 51 per cent. Study activities such as preparing documents and internet searching are used almost equally by students at school and at home in both Year 6 and Year 10, although more frequently in Year 10 than Year 6. Communication applications like email or chat are also frequently used by students but much more at home than at school and more by Year 10 than by Year 6 students. Students obtain and listen to music frequently at home but rarely at school.

Over the six years from 2005 to 2011 computer use by students has increased considerably. The percentage of students using computers frequently at home increased from 43 to 60 per cent among Year 6 students and from 58 to 83 per cent among Year 10 students. The percentages using computers frequently at school increased from 14 per cent to 28 per cent among Year 6 students and from 18 per cent to 51 per cent among Year 10 students.

Australian teenagers continue to have access to, and use, ICT to a greater extent than their peers in many other countries and are among the highest users of ICT in the Organisation for Economic Cooperation and Development (OECD), according to the OECD's *PISA 2009 Results: Students On-Line–Digital Technologies and Performance report*.

While this latest national assessment indicates that Australian students in general are ICT literate, the fact that there has been a steady increase in the average score for Year 6 students, but not Year 10 students, over the six years from 2005 to 2011 should generate further enquiry.

Many students use ICT in a relatively limited way and this is reflected in their overall level of ICT literacy. Even in Year 6, the proportion of low-achieving students has remained relatively constant since 2005. In Year 10 the percentage of students demonstrating achievement at levels below the Year 6 Proficient Standard has increased from six per cent to 10 per cent.

There are also differences associated with socioeconomic background, Indigenous status and geographic location that need to be addressed if all young Australians are to be creative and productive users of technology.

The National Assessment Program – ICT Literacy Years 6 & 10 Report 2011 by John Ainley, Julian Fraillon, Eveline Gebhardt and Wolfram Schulz for the Australian Curriculum, Assessment and Reporting Authority is available at <research.acer.edu.au/ict_literacy/3> ■

Teaching and learning with digital technology

ACER's *Digital Education Research Network* focuses on research that really shows the impact of digital technology on teaching and learning.

ACER's *Digital Education Research Network (DERN)* has close to a quarter of a million registered members – and rising – and has posted more than 135 research reviews on the use of information and communication technology (ICT) in education and training.

DERN focuses on teaching and learning in relation to ICT because there has been an enormous gap when it comes to research into ICT in education. Traditionally, the research focus has been on the digital technology, not on teaching and learning. That has been a problem for two reasons, first because a focus on technology often reduces to a fascination with gadgetry, whether or not the technology is having an impact on actual teaching and learning, but second and more importantly because the technology is developing so rapidly that the research is quickly out of date. In contrast, research in *DERN* starts with teaching and learning.

DERN's membership includes educators, ICT coordinators, school leaders, academics and researchers, and ICT-in-education specialists. *DERN* aims to make research on ICT in education and training available to practitioners at the coalface, but also to reach and influence educational researchers in this area.

Following a recent survey of existing members, ACER has developed *DERN II*. In addition to providing free comprehensive reports on high-quality empirical research, *DERN II* offers subscriptions to weekly research reports, comments and archived material, along with opportunities to enter discussion lists and download comprehensive research briefs addressing key topics on teaching and learning in relation to digital technology. ■

<dern2.acer.edu.au>

Juliette Mendelovits is the Research Director of ACER's Assessment and Reporting: Humanities and Social Sciences research program.

Reading in online environments

Juliette Mendelovits examines the results of an international assessment of 15-year-old students' ability to read digital texts.

In 2009 the Organisation for Economic Cooperation and Development (OECD) through the Programme for International Student Assessment (PISA) examined 15-year-old students' ability to read, understand and interact with digital texts. The assessment of digital reading, undertaken by around 25 000 students in 19 of the 67 countries and economies that participated in PISA 2009, represented the first large-scale international assessment of digital reading. ACER released the Australian report in 2012 and has since conducted further analysis of the results in order to answer questions such as how well young people deal with contradictory and unreliable information online.

PISA's digital reading assessment is an assessment of reading in the digital medium, as opposed to a computer-delivered assessment of reading in the print medium. While many of the skills needed to read a digital text are similar to those needed to read a print text, differences between print and electronic environments require readers to develop new skills. The nature, form and blurred boundaries of digital texts mean that readers typically construct their own path, choosing which fragments of the almost infinite number of texts should be read – more so than with printed texts, which have a physical order and physical boundaries. Digital texts also offer different opportunities for readers to engage with the text by directly influencing the content: for example by responding to an email message or adding a comment to a blog.

Australian students' achievement

Results from the digital reading assessment revealed that Australian students ranked second among participating countries, outperformed only by Korea. New Zealand achieved a similar score to Australia, but all other countries or economies performed on average at a level significantly lower than Australia.

In almost all aspects of the assessment, Australia performed significantly better than the average for the 16 OECD countries and economies that participated in the digital reading assessment. For example, 17 per cent of Australian students were highly skilled digital readers compared to eight per cent of students across the OECD, while 10 per cent of Australian students were low performers compared to 17 per cent of students across the OECD.

On average, Australian males performed at a significantly lower level than females. This was the case in all participating countries except Colombia, although the gender difference in Australia was wider than the OECD average. Around 20 per cent of Australian girls and 15 per cent of Australian boys reached a very high level in digital reading literacy, compared to nine per cent and six per cent respectively across participating OECD countries.

The average digital reading literacy achievement of students in the independent school sector was significantly higher than that of students in the Catholic school sector, who in turn performed significantly higher than students in the government school sector. Students attending schools in metropolitan areas performed significantly higher than students in provincial or remote schools. Students in provincial schools also performed significantly higher than students attending schools in remote areas.

When examined according to students' responses to questions regarding where they and their parents were born, the average digital reading literacy performance of first-generation students was significantly higher than that of other Australian-born students and foreign-born students.

Differences between digital and print reading

The students sampled in the digital reading assessment were a subset of those who were administered the paper-based assessment, making it possible to compare performance in reading in the two media at the country level.

Australian students performed more strongly in digital reading literacy than in print reading literacy. This was generally the case in countries that were high performers in print reading literacy.

The gender gap in digital reading achievement was smaller than the gender gap found in print reading, both in Australia and internationally.

Across the different immigrant status and language background reporting groups within Australia, students performed significantly higher in digital reading literacy than print reading literacy, except for students who attended schools in remote areas, whose digital and print reading literacy performances were not significantly different.

The differences in the formats of the print and digital reading assessments provide some clues as to why Australian students on average performed better in digital reading than in print reading.

Approximately 60 per cent of the stimulus materials in the print reading assessment were continuous texts such as extracts from prose and poetry. The majority of the stimulus materials in the digital reading assessment were multiple format texts that used several smaller pieces of text. Results from the 2000 and 2009 cycles of PISA, in which reading was the main assessment domain, show that Australian students performed better on non-continuous texts than on continuous texts. The texts used in the digital reading assessment are more akin to non-continuous texts than continuous texts, as they are shorter in length and because the spatial arrangement of the texts is part of their meaning. It is therefore possible that the nature of the stimulus materials contributed to Australian students' achievement.

Another notable feature of Australian students' performance on the print and digital reading assessments relates to the format of the tasks. In both media, some of the tasks required the students to select a response (usually in the format of multiple choice questions), whereas others required the response to be constructed: students had to write a response (in the paper-and-pen test) or input text (in the digital assessment).

Australian students' average percentage of correct answers on each of print multiple-choice items, print constructed-response tasks and digital multiple-choice items was around two or three percentage points higher than the OECD average; however, for digital constructed-response tasks, the difference was almost six percentage points higher. This helps explain why Australian students performed better in digital reading than in print reading, and significantly better than most other countries on the digital reading assessment. Moreover, this result suggests something about motivation: given that generating a constructed response requires more effort than selecting a multiple-choice option, it can be inferred that Australian students were relatively highly engaged by the digital reading assessment, as well as relatively proficient.

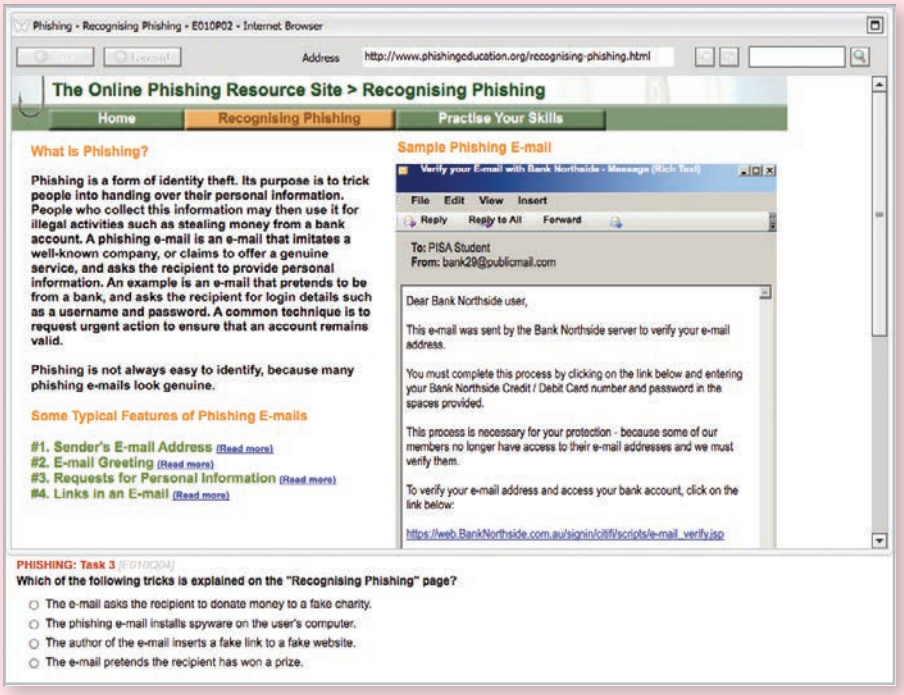
Reading in the 21st century demands proficiency in dealing with both print and digital texts. It is clear from PISA that, in Australia and around the world, boys' performance in print reading is cause for concern. There is a wide gap between boys' and girls' proficiency, and the gap appears to be widening. In the digital medium, girls are still performing relatively well as readers in comparison with boys, but the gap is narrower. Finding some way to harness the reading interests and strengths of boys would have great national benefits as well as for individuals' social, economic and personal lives.

Print and Digital Reading in PISA 2009: Comparison and Contrast, by Juliette Mendelovits, Dara Ramalingam and Dr Tom Lumley, is available from <research.acer.edu.au/pisa/6/>

See also: *Preparing Australian Students for the Digital World: Results from the PISA 2009 Digital Reading Literacy Assessment*, by Dr Sue Thomson and Lisa De Bortoli, available from <research.acer.edu.au/ozpisa/10/> ■

Evaluating information online

A study of students' ability to evaluate digital texts has revealed that teenagers find it particularly difficult to determine the credibility and trustworthiness of material on the internet.



Example of a selected response item from the PISA 2009 digital reading assessment

There is sometimes an assumption that young people who have been brought up in digital environments are able to use online information effectively. Operating successfully in the digital environment requires the ability to evaluate the usefulness and trustworthiness of information. Faced with large amounts of information and limited time, readers must continually make immediate evaluations of different sources, in terms not only of relevance but also of trustworthiness.

Students' ability to evaluate digital texts available online is significant because such content is in many cases not subjected to the traditional mechanisms that in print publishing exert some control over its authority, reliability, credibility and trustworthiness.

A number of tasks in the PISA digital reading assessment examined 15-year-old students' capacity to deal with potentially unreliable or contradictory information on the internet. Some tasks required students to make predictive judgements, using only the information available in a set of search results. Other tasks presented students with information on web pages and asked them to make reflective judgements, describing the criteria they used to evaluate, for example, the authority of information or sources.

Results from the digital reading assessment revealed that, internationally, tasks requiring students simply to identify contradictory information appeared to be easier than tasks requiring evaluation. The latter kinds of tasks are relatively challenging for 15-year olds, and those demanding the critical appraisal of texts for credibility or trustworthiness are particularly difficult.

Tasks requiring only recognition of contradictory information, or information that was potentially reliable or unreliable, were answered successfully by between a third and half of students. Once students were required to articulate an evaluation of the material's reliability, referring to the likely authority of the source, the proportion able to successfully respond fell to about a quarter of students.

These results should concern teachers and policy makers, as they suggest that most 15-year-old students do not know how to begin evaluating material they encounter on the internet. The majority of students consider information online first in terms of relevance or interest, rather than looking at the reliability of its source. In order to make judgements about the reliability, credibility and trustworthiness of online content, however, students need to have criteria for evaluating information, and need to be taught how to make evaluations.

How well do young people deal with contradictory and unreliable information online? What the PISA digital reading assessment tells us, by Dr Tom Lumley and Juliette Mendelovits, is available from <research.acer.edu.au/pisa/3/> ■

Digital assessments of early learning

ACER has developed a computer-based monitoring and assessment tool for the Northern Territory Department of Education and Training (DET) that will be used to assess Year 1 students' literacy and numeracy skills from 2013.

While other computer-based assessments for early years do exist, they generally involve one-to-one administration by teachers. The ACER assessment pioneers an approach where early years students independently interact with the program by navigating the site, tackling the questions and recording their own responses.

From the very early stages of the test development, an attempt to replicate or replace the teacher-student interview style was felt to be counterproductive so the focus of design became about 'what are the good points about using a computer'?

Many benefits were discovered for the computer-based model.

Firstly, research shows that children, including those from migrant and Indigenous backgrounds, engage strongly with the technology. They enjoy the independence and interactivity of using computers and computer games, even with software that does not reflect their own backgrounds.

The audio features of a computer enable standardised delivery to all students. Instructions are recorded by professional voice actors who can be directed to give emphasis to intonation where the question's intent requires. Students can listen to the instruction as many times as they need to, which saves the teacher reading the same text over and over again.

Due to the autonomous nature of engaging with a computer program, students are less likely to feel pressure when they realise they have made a mistake. Clicking the Undo button allows for easy self-correction and a larger scope for thinking through a variety of answers before committing to one. This feature, combined with an engaging format, has the ability to allow students to feel less like they are being assessed and reduce performance anxiety that can be created in other test environments.

The model also enables the capacity to contribute to student profiles by recording computer behaviours such as number of seconds spent on a

Danielle Anzai is a Research Fellow in ACER's Assessment and Reporting research program.

Danielle Anzai reports on an innovative computer-based early-years literacy and numeracy assessment that puts young learners at the controls.

question, use of the pop-up text before recording an answer, and number of times an instruction was listened to.

Finally, only those questions that can be asked in a manageable way onscreen were considered. This is the same for response styles also. Hence, while the main assessment is mapped against the new Australian Curriculum with additional diagnostic modules reflecting the Northern Territory's own T-9 Diagnostic Net, the components of writing and speaking from the Australian Curriculum are not covered. To reduce confusion, there are only two item format styles, 'clicking on' and 'drag and drop'.

ACER will also deliver a practice program so that teachers can troubleshoot the administration and students can familiarise themselves with the navigation prior to the trial test. To make the most of computer-based features and avoid the navigation itself becoming an obstacle, students will be able to engage with the practice program year-round. This will allow students to become comfortable with the technology, style and language.

In commissioning the work, DET was very clear that the assessment should feel local and familiar, and reflect the students' context. The assessment features remote scenery and bush images, and one of the texts has an Indigenous family as the main characters and is read by an Indigenous voice actor. ACER secured a range of actors to read the stories for the comprehension section, and Julie Nihill – from *Blue Heelers* and now a teacher at Collingwood College in Melbourne – is voicing all the audio. Every instruction and question is available as an audio and text option.

ACER piloted the assessment in several Northern Territory schools, including a remote Indigenous school in West Arnhem Land, in May 2012. Feedback from the pilot indicated that the young learners enjoyed the assessment and were able to navigate the computer-based materials. The teachers who participated were enthusiastic about the potential of the tool to inform their own planning.

A larger trial of the assessment will take place at the end of 2012, and will reveal important information about this new form of testing including how well six-year-olds cope with multiple-choice questions and how well they can work independently on computers. ■

School improvement

Improving our national educational performance depends on ensuring high quality leadership and effective classroom teaching in all Australian schools, as **Geoff Masters** explains.

Professor Geoff Masters is the Chief Executive of ACER.

There is now a widely held view that the most effective strategy for improving countries' educational performances is to improve the day-to-day work of schools. This view follows several decades of significantly increased expenditure on school education, including the funding of major reforms and targeted intervention programs, often with little or no accompanying evidence of improvements in the quality or equity of educational outcomes.

Promoting school improvement

In an effort to 'drive' improvements in the day-to-day work of schools, many education systems have introduced rewards and/or sanctions tied to school results. Rewards sometimes take the form of financial incentives; sanctions may include increased system intervention, the replacement of the school principal or, in extreme cases, school closure. The theory of action underpinning these schemes, which tend to follow models adopted from the world of business, is that when rewards or sanctions are attached to desired results, greater employee effort ensues, resulting in improved outcomes.

An example of a reward scheme of this kind is the Australian Government's *Reward for School Improvement* initiative, introduced as an election commitment in 2010. Under this initiative, $275.6 million in reward payments will be provided between 2015 and 2020 to Australian schools that can demonstrate improved student results.

Despite their widespread use, results-based incentive schemes have a disappointing track record. In businesses, results-based incentives appear to be effective only in motivating relatively low-level work. A recent US review of test-based incentive schemes in schools concluded that the benefits have been quite small and highlighted the many unintended ways in which financial rewards distort the work of schools.

Part of the reason for the limited success of results-based incentives is that they ignore the research on human motivation. For example, there is evidence from psychology that paying people for things they would have done anyway can lower performance. But perhaps more importantly, results-based incentives are based on the assumption that employees know how to improve and that what is lacking is effort. In education and in business it is

now recognised that this assumption undervalues the importance of capacity building and organisational culture. As Richard Elmore observes, 'people in schools already are working pretty reliably at the limit of their existing knowledge and skill and giving them information about the consequences of their practice will, in general, not significantly improve that practice'.

Maintaining a focus on outcomes

Nevertheless, the ultimate goal of school improvement is to improve outcomes for students. Improvements in school practices and processes are largely meaningless if they do not lead to better outcomes for the students who attend them. For this reason, reliable outcome measures will continue to be essential to evaluations of school improvement.

Experience in school systems that have introduced results-based incentives is that when narrow measures of student outcomes – for example, only literacy and numeracy test results – are used to make high-stakes decisions, the behaviours of teachers and schools change accordingly. These changes are sometimes positive and intended, but they also include a variety of 'gaming' behaviours designed only to increase test results. Schools sometimes assign their best teachers to the year levels in which tests occur, inappropriately narrow the focus of teaching, withhold less able students from testing and, in extreme cases, engage in cheating practices such as ensuring that relevant information is displayed on classroom walls. The consequence is 'score inflation', with results on high-stakes tests not being matched by results on low-stakes tests of the same general content.

A response to these observations has been to collect data on a broader range of outcome measures, including school attendance, school completion, disciplinary actions, Year 12 results and post-school destinations.

The ultimate goal of School improvement is to improve outcomes for students

Importantly, measures of school improvement require evidence of change over time. This is because measures of student achievement at a point in time are strongly influenced by students' backgrounds and starting points. Improvements in teaching and learning can be inferred from changes in student performance (for example, changes over time in Year 5 reading levels in a school). But even here, caution is required. Cohorts of students in a school can vary from one year to the next, meaning that school improvements are best inferred from long-term trends in achievement levels rather than from year-to-year fluctuations.

Measures of improving school practices?

School improvement requires changes in the work of a school – particularly enhancements that lead to better outcomes for students. For this reason, an argument can be made for defining school improvement not only in terms of improving student outcomes, but also in terms of improving teaching, learning and leadership practices.

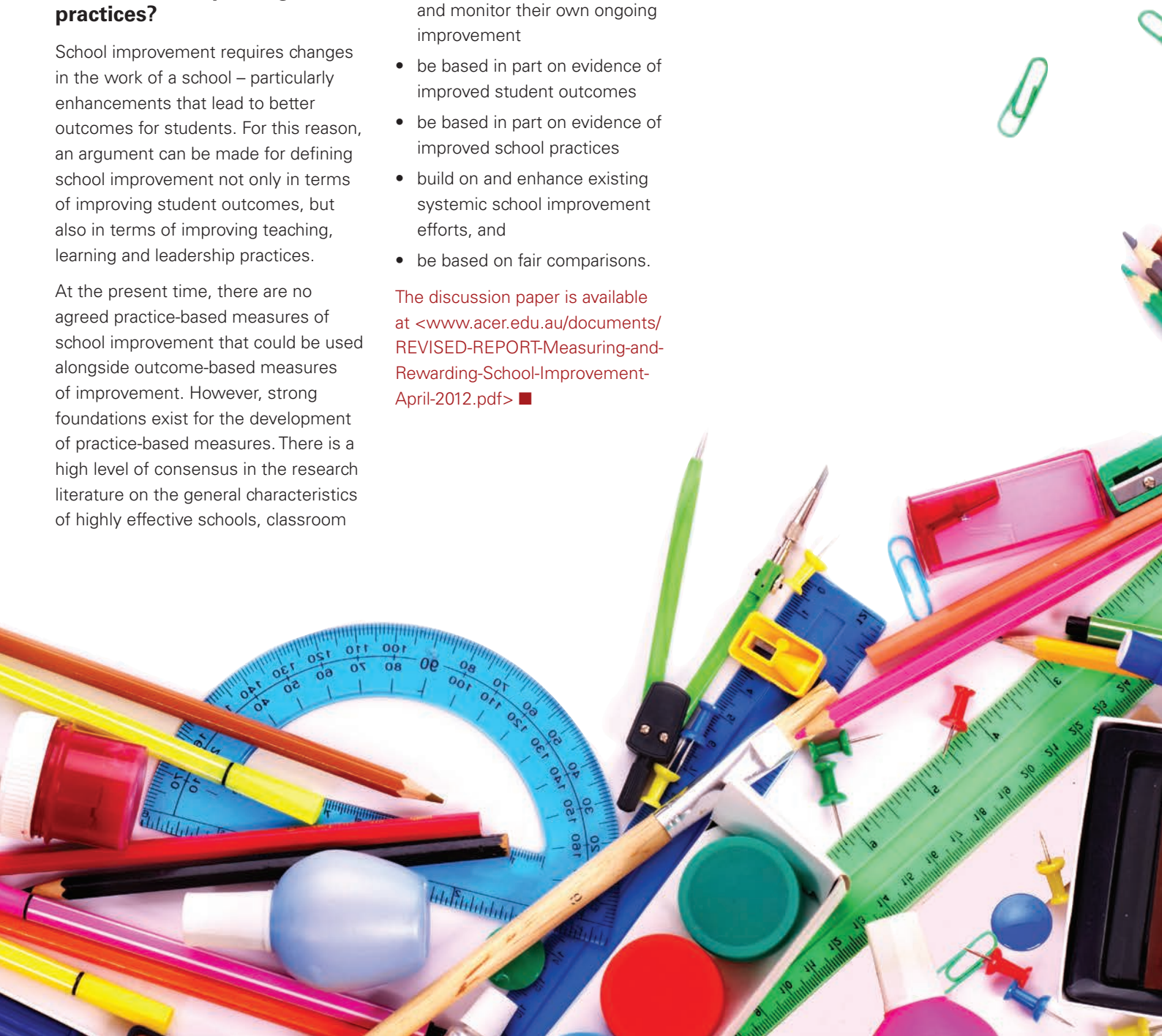
At the present time, there are no agreed practice-based measures of school improvement that could be used alongside outcome-based measures of improvement. However, strong foundations exist for the development of practice-based measures. There is a high level of consensus in the research literature on the general characteristics of highly effective schools, classroom teaching and school leadership. Most school systems have incorporated this knowledge into their school improvement frameworks and regular school review processes.

If rewards are to be provided to schools for evidence of improvement, then they should be tied to matters over which schools have direct control; they should make transparent the relationship between rewards and the day-to-day work of schools; and they should promote highly effective, evidence-based practices. ACER's discussion paper for the Australian Government proposes a set of principles to underpin the *Reward for School Improvement* initiative. Specifically, rewards need to:

- encourage schools to evaluate and monitor their own ongoing improvement
- be based in part on evidence of improved student outcomes
- be based in part on evidence of improved school practices
- build on and enhance existing systemic school improvement efforts, and
- be based on fair comparisons.

The discussion paper is available at <www.acer.edu.au/documents/REVISED-REPORT-Measuring-and-Rewarding-School-Improvement-April-2012.pdf> ■

Strong foundations exist for the development of practice-based measures



A framework for school improvement

ACER is working with schools and school systems to review current school practices to achieve ongoing improvements in the quality of classroom teaching and learning.

In 2008 ACER Chief Executive Professor Geoff Masters was commissioned by the Queensland Department of Education and Training to review primary school education in Queensland. One outcome of that review was the development of the *Teaching and Learning School Improvement Framework*, an evidence-based tool that can be used to evaluate a school's practices in areas that have been shown through research to have an influence on the quality of classroom teaching and learning.

The framework was used as the basis of an 'audit' of every government school in Queensland in 2010. It is now being used as part of that system's ongoing school review cycle, in government school reviews in the Northern Territory and as a basis for school self-reviews in Tasmanian government schools. ACER also has used the framework to conduct school reviews for non-government schools that have requested independent evaluations of their teaching and learning practices.

Most education systems in Australia already have well-established school improvement processes. The advantage of the *Teaching and Learning School Improvement Framework* is that, rather than addressing the wide range of matters typically included in school improvement frameworks, it focuses on a small number of questions that are particularly important in improving student outcomes. Is the school clear about what outcomes it wants to see improved? Is it monitoring progress in improving these outcomes and encouraging the school-wide analysis and discussion of data? Does the school have a culture of high expectations? Does the school use its limited physical and human resources to maximise student outcomes? Do the staff of the school function as an expert professional team? Is the school's curriculum delivery clear and coherent? Does the school place a priority on identifying and addressing the learning needs of individual students? Does the school work to ensure that highly effective teaching practices are implemented throughout the school?

An important feature of the *Teaching and Learning School Improvement Framework* is that it describes varying levels of practice – from Low to Outstanding – enabling judgements about where schools are in their individual improvement journeys. In this way, the framework provides a common language of improvement and also assists in the identification of improvement strategies appropriate to schools' particular circumstances.

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This will be the final print edition of *Research Developments*, first published in 1999, before it returns in a new online-only format in 2013.

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Excellence in Professional Practice conference 2013

ACER's inaugural Excellence in Professional Practice conference, on the theme *Teaching the Australian Curriculum: Excellence and innovation in the classroom*, will be held on 17-18 March 2013 on the Gold Coast, Queensland.

This conference celebrates excellence in teachers' professional practice by drawing together teachers from across Australia to share expertise and learn from one another. It will showcase best practice in teaching the Australian Curriculum from classrooms around the country.

The conference will combine inspiring keynote presentations, workshops and poster presentations, as well as casual and formal networking opportunities including 'birds of a feather' sessions in a friendly, informal and lively atmosphere.

For further information and to register visit <www.acer.edu.au/eppc>

Aboriginal and Torres Strait Islander children resilient and ready for school

A paper developed by ACER and the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) highlights the importance of a strengths-based approach to school readiness for Aboriginal and Torres Strait Islander children

Analysis of the Longitudinal Study of Indigenous Children (LSIC) and a literature review found that family support, strong cultural identity, good health, positive self-identity and engaging in shared activities such as storytelling are likely to lead to resilience in Aboriginal and Torres Strait Islander children. Furthermore, the responses of LSIC parents and carers show the critical importance of family and connections to land and culture in developing children who are resilient.

The report notes that these factors are not currently being reflected in testing and checklists used to measure children's wellbeing and school readiness and calls for the use of a strengths-based approach rather than a deficit model when supporting children as they make the transition from home to formal learning. Such an approach would recognise the skills, cultural knowledge and understandings that Aboriginal and Torres Strait Islander children already have when they come to school.

The full report, *Starting school: a strengths-based approach to Aboriginal and Torres Strait Islander children*, is available from <research.acer.edu.au/indigenous_education/>

Preparing Mathematics Teachers: A study of teacher education in 17 countries

The Teacher Education and Development Study in Mathematics (TEDS-M) has revealed that countries that do well in international studies of mathematics achievement, such as Chinese Taipei and Singapore, have strong teacher education programs and quality assurance arrangements. They ensure that teaching is an attractive profession for the most able high school graduates, that the supply of new teachers matches the demand and that graduates meet high standards before gaining full entry to the profession.

Jointly managed by ACER and Michigan State University for the International Association for the Evaluation of Educational Achievement (IEA), TEDS-M compared how 17 countries prepared teachers of mathematics, as well as the knowledge these future teachers had of mathematics and how to teach it.

Approximately 22 000 future teachers from 750 programs in about 500 institutions were surveyed and tested for the study. Different tests were given to future primary and secondary teachers. Teaching staff within these programs were also surveyed. Close to 5000 teacher educators took part.

The full report, *Policy, Practice and Readiness to Teach Primary and Secondary Mathematics in 17 Countries: Findings from the IEA Teacher Education and Development Study in Mathematics (TEDS-M)*, is available from <www.iea.nl/?id=20>

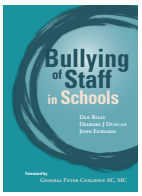
Bullying of staff in schools

Over 95 per cent of staff in schools have experienced some form of workplace bullying, with a zero tolerance approach needed to stamp out this behaviour, according to an ACER Press book launched in May by General Peter Cosgrove AC, MC.

Written by University of New England's Dr Dan Riley, Australian Catholic University's Dr Deirdre J Duncan and statistical analyst John Edwards, *Bullying of Staff in Schools* aims to assist school employees to understand the phenomenon of staff bullying, its existence, the forms it takes, and its impact on staff and their schools.

The book draws together responses from more than 2500 Australian government, Catholic and independent school employees to 42 separate kinds of bullying behaviour, revealing that over 95 per cent of respondents had experienced at least one of those behaviours. Over 75 per cent of respondents experienced a third or more of those bullying behaviours.

According to the research, the types of bullying behaviour most likely to be experienced by staff in schools are the questioning of one's professional judgement and being set impossible targets, deadlines or workload. Over 80 per cent of respondents had experienced these behaviours. The least experienced types of bullying behaviour were those actionable by law under sexual harassment and anti-discrimination legislation or criminal action such as assault.



Bullying of Staff in Schools (ACER Press, 2012) can be purchased from the ACER Online Shop <shop.acer.edu.au/acer-shop/product/A5250BK> or by contacting customer service on ph. 1800 338 402.

Vocational education and training in schools

A 2011 survey of Victorian school leavers shows the number of students studying technical and vocational subjects in senior secondary school has increased, and the majority immediately enter further education and training.

The annual *On Track* survey, conducted by ACER for the Victorian Department of Education and Early Childhood Development, surveyed more than 35 000 young people who completed the Victorian Certificate of Education (VCE), the International Baccalaureate (IB), the intermediate or senior Victorian Certificate of Applied Learning (VCAL), or a combined VCE-VCAL.

The survey included young people who completed their qualification in school (98.2 per cent) or in TAFE institutions or adult and community education providers (1.8 per cent). While the vast majority (93.9 per cent) of school completers received a VCE or completed the IB, more than 2100 young people completed VCAL instead. The proportion of school leavers who received a VCAL increased from 4.6 per cent in 2008 to 6.1 per cent in 2010. Close to 500 of the VCE recipients obtained a VCAL as well.

Apprenticeships, traineeships and employment were the most common destinations of VCAL completers, accounting for 61.8 per cent of the VCE-VCAL group and 60.2 per cent of the VCAL-only group. Certificate-level study was the next most common destination for VCAL completers. Enrolment in Certificate I-IV courses accounted for 25.6 per cent of VCAL-only completers and 24 per cent of VCE-VCAL completers.

More information about *On Track* is available from <www.education.vic.gov.au/sensecyouth/ontrack/default.htm>

Principal for a Day

More than 180 community and business leaders stepped up to support their local schools by participating in the annual Principal for a Day program in Victoria between August and October.

By becoming a Principal for a Day, business and community leaders shadow a school principal in many aspects of a common school day, including in-depth management discussions, taking classes with students, talking with parents and teachers, and even doing canteen or yard duty.

Principal for a Day is a partnership between ACER and the Victorian Department of Education and Early Childhood Development and has been held annually in Victoria since 2001.

More information is available from <www.acer.edu.au/pfad>

NAB Schools First

The recipients of the 2012 NAB Schools First Impact Awards, Seed Funding Awards and State/Territory Awards for school-community partnerships were announced in August.

This year, NAB Schools First received 765 high-quality applications. Of the winning schools across Australia, 70 received a $15 000 Seed Funding Award, 43 received a $30 000 Impact Award and seven received $60 000 as their respective State/Territory Award winner.

Impact Awards are allocated to schools with established community partnerships, while Seed Funding Awards are provided to schools that are in the early stages of a partnership.

Each State/Territory Award winner is now in the running for the National Award. The National Award winner will be announced at a ceremony in Melbourne in November and will receive a total of $200 000 for their school-community partnership.

NAB Schools First is a partnership between NAB, ACER and the Foundation for Young Australians (FYA). More than $18 million in funding has been awarded to 440 school-community partnerships around Australia since the program began in 2009.

More information is available from <www.schoolsfirst.edu.au>

Re-modelling special education

An ACER Press book launched in July by Victoria's Minister for Education, the Hon Martin Dixon, aims to change how the world approaches education for children with special needs and to show the value of the arts in the education of all children. *An Extraordinary School: Re-modelling special education* tells the story of Port Phillip Specialist School, an innovative school catering for children aged two to 18 years with a wide range of severe disabilities.

The book's editor, award-wining foreign correspondent and mother of a child at the school, Sara James, explains Port Phillip Specialist School sets a model of best practice that could and should be used in special schools across Australia and throughout the world, and could also be adapted for use in mainstream classrooms.

Port Phillip Specialist School's entire staff of teachers, arts, music and drama therapists, speech therapists, occupational therapists, hydrotherapists, physiotherapists, social workers and psychologists collaborate to address the specific needs of each student. They set high standards for their students but ensure all goals are realistic, attainable and measurable. The school teaches important skills that will improve students' quality of life, ability to learn and ability to be independent.

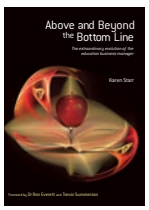
An Extraordinary School: Re-modelling special education (ACER Press, 2012) can be purchased from the ACER Online Shop <shop.acer.edu.au/acer-shop/product/A5240BK> or by contacting customer service on ph. 1800 338 402.

Business potential lies untapped in schools

A focus on education business management is key to improving student outcomes, according to the author of a new ACER Press book *Above and Beyond the Bottom Line: The extraordinary evolution of the education business manager* by Deakin University's Professor Karen Starr.

Building on research and interviews with education business managers, *Above and Beyond the Bottom Line* is the first book in Australia to explore the extent of school business and how it is conducted. The book reports 'an enormous waste of untapped business potential' and suggests schools could be run more effectively with greater autonomy and dedicated business management staff.

The book argues that employing business managers is not an additional cost to the education system, as business managers achieve savings and attract extra funds to schools, generating a substantial return on the investment of their salaries, and free up principals and educators to focus on teaching and learning.



Above and Beyond the Bottom Line (ACER Press, 2012) can be purchased from the ACER Online Shop <shop.acer.edu.au/acer-shop/product/A5182BK>or by contacting customer service on ph. 1800 338 402.

2013 conference

The ACER Research Conference 2013 on the theme *How People Learn: What lessons are there for teaching?* will take place from 4–6 August in Melbourne.

Research Conference

2013

How People Learn:

What lessons are there for teaching?

4–6 August 2013

Melbourne Convention and Exhibition Centre

Melbourne, Vic

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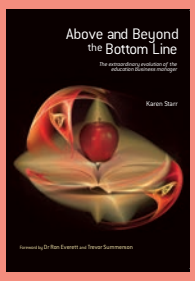
Essential resources from ACER Press

NEW!

Bring Your Own Technology: The BYOT guide for schools and families by Mal Lee and Martin Levins

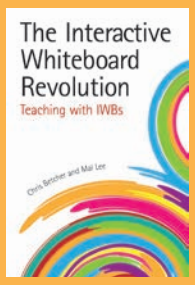
This book is designed to provide teachers and parents alike an insight into the bring-your-own-technology (BYOT) revolution sweeping across entire school communities in Australia, the US and UK, and explain the immense implications of these developments.



Above and Beyond the Bottom Line: The extraordinary evolution of the education business manager, by Karen Starr

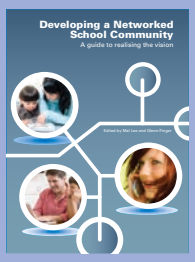
Education is BIG BUSINESS! Stakeholders are many—governments and governors, parents and students, employers and corporations, communities and nations—all with their own agendas, demands and expectations. The business surrounding education is hidden from public view, but is integral to education and student learning.

"A great value of this book comes from its recommendations on leading and managing change. Humans will change but they don't like being changed. The book suggests some ways that change can be achieved." Dr Keith Suter, Managing Director, Global Directions



The Interactive Whiteboard Revolution: Teaching with IWBs by Mal Lee and Chris Betcher

Interactive whiteboards are not just another classroom technology. As the first digital technology designed specifically for teaching and learning, they have the potential to radically alter the way we learn and facilitate the integration and ready use all other digital technologies – hardware and software. The blackboard was the symbol and transformative technology of the 18th century classroom, the interactive whiteboard is the centrepiece of the 21st century digital classroom.



Developing a Networked School Community: A guide to realising the vision by Mal Lee & Glenn Finger

In the 20th century, school was the place you went to learn; in the 21st century, because of digital technologies, children learn things at home which they don't or aren't allowed to at school. This makes the relationship between school, home and the community even more important than previously. Schools need to recognise this and use it to advantage – an essential read for the modern day educator.

Order online NOW! www.acerbookshop.com.au

MELBOURNE
19 Prospect Hill Road
Camberwell VIC 3124
T +61-3 9277 5555
F +61-3 9277 5500

SYDNEY
1/140 Bourke Road
Alexandria NSW 2015
T +61-2 8338 6800
F +61-2 9693 5844

BRISBANE
1/165 Kelvin Grove Road
Kelvin Grove QLD 4059
T +61-7 3238 9000
F +61-7 3238 9001

PERTH
7/1329 Hay Street
West Perth WA 6005
T +61-8 9235 4800
F +61-8 9235 4888

ADELAIDE
Level 3, 97 Pirie Street
Adelaide SA 5000
T +61-8 7129 4493
F +61-8 8232 4446

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